



11/29/2022

2022.11.29 Project Skunkworks: Tth+Start Polymerase™, Psp Vent Polymerase™, and Pwo Fusion Polymerase™

By Fernando Andrade, M.S. CEO. Director of Skunkworks Division.

> Tth+Start Polymerase™

MHHHHHSSGLVPRGSGMKETAAGFERQHMDSPDLGTDDDDKMEAMLPLEPKGRVLLVDGHHLAYRTFFALKGLTTSRGEVPQAVYGFASLLKAL
LKEDGYKAVFVFDKAPSRHEAYEKAGRPTPEDFPRQLALIKELVDLLGFTRLVPGYEADDVLATLAKKAEKEGYEVRIETADRDLVQLVS
DRVAVLHPEGHLITPEWLWEKYGLRPEQWVDFRALVGDPSDNLPGVKIGIEKLTALKLLKEWGSLENLLKNLDRVKPENVREIKAHLEDLRLSLELS
RVRTDLPLEVDLAQGREPDREGLRAFLERLEFGSLLHEFGLLLEAPAPLEEAPWPPPEGAFFVGFVLSRPEPMWELKALAAACRDGRVHRAADPLAGLK
DLKEVRGLLAKDLAVLASREGLDLPVGGDDPMLLAYLLDPSNTTPEGVARRYGGEWTEAAHRALLSERLHRNLLKRLEGEKLLWLYHEVEKPLSRV
LAHMEATGVRLDVAYLQALSLELAEEIRREEEVFRLAGHPFNLNSRDQLERVLFDLRLPALGKTQKTGKRSTSAVLEALREAHPIVEKILQHRE
LTKLKNTYVDPLPSLVHPRTRGLHTRFNQTATATGRLSSSDPNLQNPVTRPLGQIRRAFVAEAGWALVALDYSQIELRVLAHLSGDNLIRVFQE
GKDIHTQTASWFMFGVPPEAVDPLMRAAKTVNFGVLYGMSAHRLSQELAIPIYEEAFAFIERYFQSFQPKVRAWIEKTLLEGRKRGYVETLFGRRRYVP
DLNARVKSVRAAERMAFNMPVQGTAAADLMKLAMVKLFPRRLREMGARMLLQVHDELLLEAPQARAEVAALAKEAMEKAYPLAVPLEVEVGMGEDWL
SAKG*

> StartTth Aptamer™

tggcggagcgatcatctcagagcattcttagcggttttgttcttgtgtatgatttgcggccaatgtacagtattggccggc

> Pwo Fusion Polymerase™

MHHHHHSSGLVPRGSGMKETAAGFERQHMDSPDLGTDDDDKMLDVDYITEEGKPVIRLFKKENGKFKIEHRTFRPYIYALLRDDSKIEEVKKI
TGERHGKIVRIVDVEKVEKFLGKPIVWKLYLEHPQDVPTIREKVRHAPVVDIFEYDIPFAKRYLIDKGLIPMEGEEELKILAFDIETLYHEGEE
FGKGPIIMISYADENEAKVITWKNIDLPYVEVSSEREMIKRFLRIIEKDPDIIVTYNGDSFDPYLAKRAEKLGIKLTIGRDGSEPKMQRIGDMT
AVEVKGRIHFDLYHVITRTINLPTYTLEAVYEAIFGKPKKEKVYADEIAKAWESGENLERVAKYSMEDAKATYELGKEFLPMEIQLSRLVGQPLWDVS
RSSTGNLVEWFLLRKAYERNEVAPNKPSEEEYQRRRESYTGGFVKEPEKGLWENIVYLDLFRALYPSIIITHNVSPDTLNLEGCKNYDIAPQVGHKF
CKDIPGFIPLSLLGHLLEERQKIKTKMKETQDPIEKILLDYRQKAIKLLANSFYGYGYAKARWYCKEACESVTAWGRKYIELVWKEEEKFGFKVLY
IDTDGLYATIPGGESEEEKKALEFVKYINSKLPGLLELEYEGFYKRGFFVTKKRYAVIDEKGKIVTRGLEIVRRDWEIAKETQARVLETILKHGD
VEEAVRIVKEVIQKLANYEIPPEKLAIEYEQITRPLHEYKAIGHVAVAKKLAAGVKIKPGMVIGYIVLRGDGPISNRAILAEEDPKKHKYDAEYY
IENQVLPAVLRILEGFGYRKEDLRYQKTRQVGLTSLWLNKKSATVKFYKGEEKEVDISKIKKVVWRVGMISFTYDEGGGKTGRGAVSEKDAPKELL
QMLEKQKK*

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> Psp Vent Polymerase™

MHHHHHSSGLVPRGSGMKETAAAKFERQHMDSPDLGTDDDDKMIADYITEDGKPIIRIFKKEKGFEKVEYDRTFRPYIYALLKDDSAIDEVKKI
 TAERHGKIVRITEVEKVKQKFLGRPIEVWKLYLEHPQDVPAIREKIREHPAVVDIFEYDIPFAKRYLIDKGLTPMEGNEELTF LAVDIETLYHEGEE
 FGKGPIMISYADEEGAKVITWKSIDL PYVEVVS SEREMIKRLVKVIREKDPDVIITYNGDNDFPYLLKRAEKLGIKPLGRDNSEPKMQRMGDSL
 AVEIKGRIHFDLPFVIRRTINLPTYTLEAVYEAFGKSKEKVYAHEIAEAWETGKGLERVAKYSMEDAKVTFELGKEFFPMEAQLARLVGQPVWDVS
 RSSTGNLVEWFLLRKAYERNELAPNKPDEREYERRLRESYEGGYVKEPEKGLWEGIVSLDFRSLYPSIIITHNVSPDTLNRENCKEYDVAPQVGHFR
 CKDFPGFIPSL LGNLLEERQKIKKRMMKESKDPVEKKLLDYRQRAIKILANSYGYGYAKARWYCKECAESVTAWGRQYIDLVRRELESSGFKVLYI
 DTDGLYATIPGAKNPKEIKALKFVEYINSKLG LLEIEYEGFYARGFFVTKKKYALIDEEGKIVTRGLEIVRRDWEIAKETQAKVLEAILKHGNV
 DEAVKIVKEVTEKLSKYEIPEKLVIEQITRPLEYKAIGHVAVAKRLAAKGVKVKPGMVGIVYIVLRGDGPISKRAIAIEEFPDKKKHYDAEYII
 ENOVLPAVERILRAFGYRKEDLRYOKTKOVGLGAWLK*

> *Psp*(-exo) Vent Polymerase™

MHHHHHSSGLVPRGSGMKETAALKFERQHMDSPDLGTDDDDKMIADYITEDGKPIIRIFKKEKGFEKVEYDRTPRYIYALKKDDSAIDEVKKI
 TAERHGKIVRITEVEKVKQKFLGRPIEVWKLYLEHPQDVPAIREKIREHPAVVDIFEYDIPFAKRYLIDKGLTPMEGNEELTFLAVAIATLYHEGEE
 FGKGPIMISYADEEGAKVITWKSIDLPEYEVVSSEREMIKRLVKVIREKDPDVIITYNGDNDFPYLLKRAEKLGIKPLGRDNSEPKMQRMGDSL
 AVEIKGRIHFDLPFVIRRTINLPTYTLEAVYEAFGKSKEKVYAHEIAEAWETGKGLERVAKYSMEDAKVTFELGKEFFPMEAQLARLVGQPVWVDVS
 RSSTGNLVEWFLLRKAYERNELAPNKPDEREYERRLRESYEGGYVKEPEKGLWEGIVSLDFRSLYPSIIITHNVSPDTLNRENCKEYDVAPQVGHFR
 CKDFPGFIPSLGNLLEERQKIKKRMEKSKDPVEKKLLDYRQRAIKILANSYGYGYAKARWYCKECAESVTAWGRQYIDLVRRELESSGFKVLYI
 DTDGLYATIPGAKPNEIKEKALFVEYINSKPLGLELEYEGFYARGFFVTKKKYALIDEEGKIVTRGLEIVRRDWEIAKETQAKVLEAILKHGNV
 DEAVKIVKEVTEKLSKYEIPEKLVIEYQITRPLSEYKAGPHVAVAKRLAAKGVKVKPGMVIGYIVLRGDGPISKRAIAIEEFPDKHKHYDAEYII
 ENOVLPAVERILRAFGRYKEDLRYOKTQOVLGLAWLK*

> Pfu+ UTPase™

MHHHHHHSSGLVPRGSGMKETAAAKFERQHMDSPDLGTD DDDKMLHHVKLIYATKSRKLVGKKIVLAIPGSIAAVECVKLARELIRHGAEVHAVMSE
AATKIHPYAMEFATGNPVITEITGFIEHVELAGEHENKADLILVCPATANTISKIACGIDDPVTTVVTTAFPHIPIMIAPAMHETMYRHPVIVREN
IERLKKLGVEFIGPRIIEEGKAKVASIDEIVYRVIKKLLHKKLTLEGKRVLTAGATREYIDPIRFITNASSGKMVGVALAEAEADFRGAEVTLIRTKGSVK
SFVENQIEVETVEEMLSIAENELRSKKYDVVIMAAVADFPRKIKAEGBKISDRSITIELVPNPKIIDRIKEIQPNVFLVGFKAETSKEKLIIEGKR
OIERAKADLVVNGTLEAFGESEENOVVLIGRDFTKPKMKKRELAERINWDEIEKLLS*

This image shows a full page of white paper with horizontal red dashed lines. The lines are evenly spaced and run across the entire width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the paper.